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The Economic Value of By-Product Foods

Abstract of Paper 12 of the 1922 Meeting at Manhattan

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In this economic age the utilization of by-products of food has become a necessity, and to the manufacturer and the chemist is presented the problem of preventing waste. In some industries in fact it is stated that no profit is made from the main food products placed on the market, but that he profits must come from the saving of the by-products. A few suggestions as to what has already been accomplished can only be mentioned here.

In the meat packing industry those by-products saved for consumption are the head, heart, tongue, liver, intestines, brain, fat, bones, feet, and hair; and, not least important, all materials not otherwise used are made into fertilizers. Fish by-products made are caviar, isinglass, glue, and oil for industrial and edibile uses. Cottonseed, which formerly was thrown away, or even disposed of at some expense, is utilized for making salad oil which when hydrogenized is used for cooking and in the manufacture of butter substitutes; the "linters" are used in manufacturing felt, and the "press cake" may be ground and used as stock feed or as a fertilizer. Corn oil, has become a valuable material which is utilized as a salad oil, or in butter substitutes, and the refuse is valuable stock feed.

The soy bean contains twenty per cent of a bland oil which is used all over the world. Two hundred milliion pounds are annually imported into the United States. Some of it is used in food, and the lower grades in soap and paint manufacture. Other "oil-bearing" seeds are used as a source of oil in different countries, as the sesame, poppy and hemp in Europe, the sunflower in Russia, and tomato seeds in Italy. Apricot kernels, peach kernels and mustard seeds yield excellent oils.

In vine-growing countries, not only is the fruit juice used for making grape juice and wine, and the fruit for making raisins, but the wine when it has fermented sufficiently, deposits "Argols" or acid-potassium tartrate, which when purified yields Cream of Tartar, and Tartaric acid, used in making baking powder. The refuse from the wine press, when burned, yields potassium carbonate, valuable as a fertilizer.

In the citrus industries, the "culls", or unripe and imperfect fruit, which not so long ago was gotten rid of with difficulty, are now utilized at a considerable profit. From the oranges come orange oil, dried orange peel, concentrated pulp, which is the basis of numerous orange beverages, and more recently a white, dry pectin which is used in making jelly from fruits which are wanting in that material. From the lemon, in addition to the oil and pectin, citric acid and calcium citrate are obtained. The waste products in this industry are dried and used in the manufacture of chicken feed.

Casein, from skim milk, used in making buttons and in various industries, and milk sugar, are valuable by-products in the dairy industry. Sugar is not the only useful product from the sugar-cane, for the final molasses residue known as "black-strap" is a valuable stock food. The spent bone black used in the purification of the cane juice is used for making shoe blacking, and from the "Bagasse" or crushed cane a very useful insulating building board or an insulating material may be made. In the roasting of coffee, the alkaloid caffein in small quantities is driven off and collects in the flues. This is later purified and is used in various popular carbonated beverages.

This list is only suggestive, for there are numerous other by-products that have been or may be utilized, and it is the task of the chemist and the food manufacturer, to practically apply their knowledge to our food supply, and thus effect a great saving.

Some Needed Reforms in Packing of Food Products

Paper 4 of tthe 1923 Meeting at Lawrence

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To one who has been associated, almost from the beginning, with the reforms that have been made in the campaign for furnishing pure foods to the consumer, it is interesting to watch the evolution of a label to the point where it tells "the truth, the whole truth and nothing but the truth". This label is coming and in fact has almost arrived.

Previous to 1906, when the Federal Food and Drugs Act was passed it was evidently not considered "good form" for a label on a food container to tell the truth. A "strictly pure" spice meant cracker dust flavored with pepper, allspice, or cloves, as the case may be. "Pure Vermont maple syrup" with an elaborate cut of a "Sugar Bush" meant cane sugar flavored with an extract from maple bark and corn cobs. "Grape crystal baking powder" with a cut of a luscious bunch of grapes (because tartaric acid is made from the argol of grapes) meant just an ordinary alum baking powder. "Pure strawberry jam" meant a mixture of some fruit juices, perhaps that of the apple, colored with a coal tar dye, sweetened with glucose rather than cane sugar, flavored with synethic flavors made in the chemical laboratory, preserved with sodium sulphite and transformed into strawberry jam by the simple admixture of a sufficient quantity of grass seed. The so-called "condensed cream" was concentrated skim milk. "Hamburg steak" was made of the ancient scraps of beef left in the market, kept in a state of perennial youth, not by the use of the lip-stick, so effectually used in some circles at present, but by an abundant sprinkling of the preservative sodium sulphite, which makes steak look red and fresh. Oysters were "fatted up" by being soaked in fresh water: "Genuine olive oil from Lucca,